FOX 500

FIBER OPTIC EXTENDER FOR RGBHV, AUDIO, AND RS-232

- Extends RGBHV, stereo audio, and RS-232 control signals long distance over a single fiber
- All-digital, zero compression technology for high performance signal transmission
- Pixel-for-pixel image quality, up to 1600x1200
- Available as 850 nm multimode and 1310 nm singlemode models
- Buffered input loop-through
- Dual RGB and stereo audio outputs
- Real-time status LED indicators for troubleshooting and monitoring
- Alarm notification for fiber link loss
- Auto Input Memory

FOX 500 Tx

FOX 500 Rx

The Extron FOX 500 Fiber Optic Extender is a transmitter and receiver set for long haul transmission of high resolution RGB, audio, and RS-232 control signals over a single fiber. Engineered for reliability and exceptional high resolution image performance, it uses Extron's exclusive all digital, zero compression technology, and also includes a host of features for enhancing A/V system integration.

DESCRIPTION

The Extron **FOX 500 Fiber Optic Extender** is a transmitter and receiver set for long haul transmission of high resolution RGB, audio, and RS-232 control signals over a single fiber. Engineered for reliability and exceptional high resolution image performance, it uses Extron's exclusive all digital, zero compression technology to deliver perfect pixel-for-pixel transmission of computer-video images up to UXGA (1600x1200) resolution. Designed specifically for A/V systems, the FOX 500 also includes a host of integrator-friendly features such as image adjustments and calibration, dual RGB and audio outputs at the receiver, RS-232 control from multiple locations, rack-mount capability, and real-time system monitoring.

The FOX 500 is ideal for a wide range of applications requiring long distance transmission of high resolution content with the highest quality. Because transmission of content is inherently secure and immune to outside interference, fiber applications are favored in government, military, and medical environments. The FOX 500 transmitter and receiver feature industry standard LC-type connectivity.

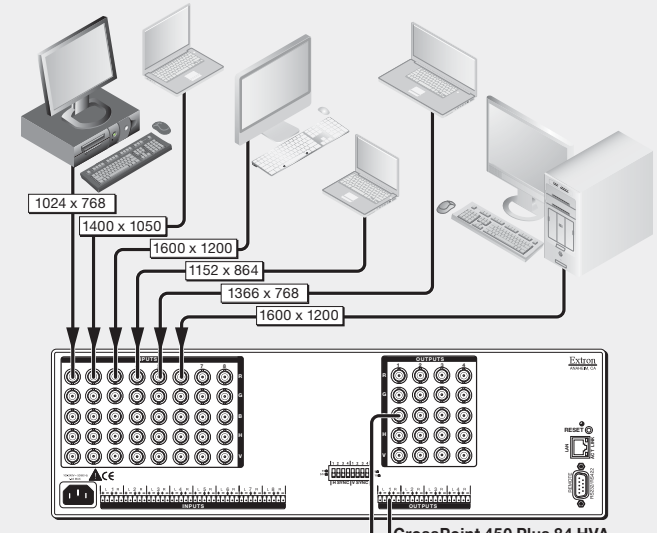
The FOX 500 MM supports multimode fiber at 850 nm, which is typically used within buildings or facilities with moderate-range transmission distances up to 150 meters (492 feet). The FOX 500 SM supports singlemode as well as multimode fiber at 1310 nm. Singlemode fiber offers long-range transmission capability over extreme distances of up to 30 km (18.75 miles). It is used in very large facilities such as airports and stadiums, as well as for connecting over very long distances between facilities such as university campuses.

For convenient integration into A/V systems, the FOX 500 transmitter accepts, digitizes, and transmits all RGB format signals – RGBHV, RGBS, RGsB, and RsGsBs, along with unbalanced or balanced stereo audio and RS-232 control signals. The transmitter also provides controls for optimizing video and audio signals. The FOX 500 receiver features dual RGB and stereo audio outputs, which reduces additional A/V equipment requirements, as well as sync format conversion for RGBHV, RGBS, or RGsB output.

At the FOX 500 transmitter, both transmitter and receiver can be controlled and configured through RS-232. With a second fiber link installed, functions for both units can be controlled at either location. Since the units are typically situated far apart, this capability adds considerable versatility, enabling adjustment and calibration of video and audio at the receiver. It also allows for verification of fiber link status between the units as well as the presence of RGB and audio input signals at the transmitter.

Auto Input Memory Recall

In many environments such as boardrooms and courtrooms, A/V sources such as are frequently changing. Therefore, incoming signal rates and resolutions to an A/V system are also continuously changing. This holds true in switcher based environments as well, where numerous sources may be switched into the FOX 500 for long distance distribution. For these reasons, the FOX 500 includes an Auto Memory feature that automatically stores image settings based on the incoming signal. In the future, whenever a newly selected signal is recognized, the FOX 500 automatically recalls these parameters from memory. This feature helps simplify integration by minimizing the time needed to set up for incoming signals, while ensuring consistent and reliable signal recognition during operation.



Memory 1	1024 x 768
Memory 2	1400 x 1050
Memory 3	1600 x 1200
Memory 4	1152 x 864
Memory 5	1366 x 768
Memory 6	1600 x 1200
Memory 7	
Memory 8	

FEATURES

- **Extends RGBHV, stereo audio, and RS-232 control signals very long distances over a single fiber**
- **All digital, zero compression technology provides pixel-for-pixel performance with signals up to 1600x1200** – The FOX 500 delivers uncompressed pixel-for-pixel transmission of video signals to ensure optimal image quality at resolutions up to UXGA (1600x1200). Signal resolutions higher than UXGA can be accommodated, but will not be sampled at a 1:1 pixel ratio.
- **Buffered input loop-through** – A buffered input loop-through on the FOX 500 transmitter provides an output signal to drive a local monitor.
- **Industry standard LC connectors provide reliable physical connectivity and precise fiber core alignment**
- **Alarm notification for fiber link loss** – The FOX 500 can be set up to trigger an external control system for immediate notification when a fiber link has been lost. Requires second fiber link.
- **Available as a 850 nm multimode model for moderate-range transmissions, and a 1310 nm singlemode model for extreme distances up to 30 km (18.75 miles)**
- **Dual RGB and stereo audio outputs**
- **Auto Input Memory** – When activated, the FOX 500 automatically stores size, position, and detail information based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.
- **30 user memory presets** – In addition to Auto Input Memory, 30 user memory presets are available for saving and recall of size, position, and detail information for multiple incoming sources. The ability to save and recall presets is useful in switcher-based environments.
- **Active PC audio to balanced audio interfacing**
- **RS-232 serial control at transmitter and receiver** – The FOX 500 transmitter and receiver feature front and rear panel RS-232 serial ports for control and configuration. The second fiber link allows for control of both units at either location, as well as remote verification of fiber link status and the presence of input RGB and audio signals.
- **Internal test patterns for calibration and setup** – Three test patterns are available, including grayscale, color bars, and alternating pixels.
- **Auto-Image automatically optimizes output** – A press of a button automatically adjusts the sizing, centering, and filtering to optimize the output image. This can save time and effort in fine tuning displayed images. Requires second fiber link.
- **Real-time status LED indicators for troubleshooting and monitoring** – LEDs on the transmitter and receiver front panels verify the presence of RGB and audio signals at the transmitter as well as active fiber links between the units. Requires second fiber link.
- **Front panel security lockout** – This feature locks out all front panel functions; all functions however, are available through RS-232 control.
- **Compatible with FOX 500 DVI transmitter and receiver** – Enables ultra-long distance DVI-to-analog RGB and analog RGB-to-DVI conversion without the need for extra signal conversion devices.
- **Rack-mountable 1U, half rack width metal enclosures**
- **Internal international power supply**

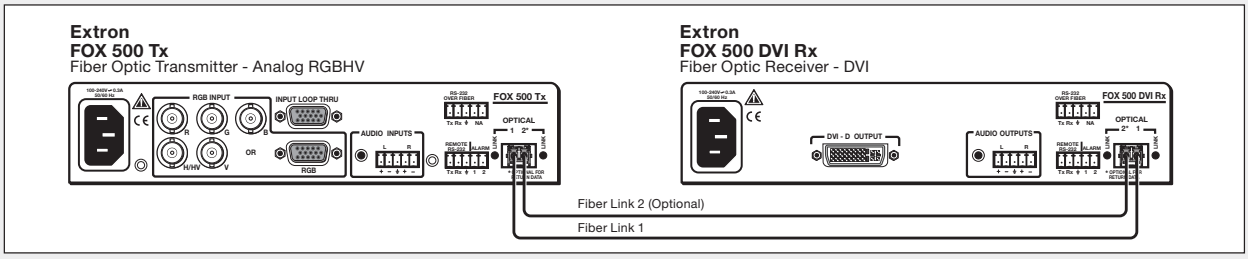
Integrate Fiber Optic-Based A/V Systems with the Extron Fiber Matrix 6400

The FOX 500 provides high performance, ultra-long distance transmission of RGB, audio, and RS-232 control signals. It also can serve as part of an integrated fiber optic-based A/V system with the Extron Fiber Matrix 6400 modular fiber optic matrix switcher. The Fiber Matrix 6400 is designed for complete, end-to-end digital A/V signal transmission and routing over fiber optic cable. It is expandable in sizes from 8x8 up to 64x64, and is fully compatible with the FOX 500 Series of fiber optic transmitters and receivers, as well as the FOX HD-SDI. Supporting rates up to 4.25 Gbps, it accepts and routes high resolution video signals, including computer-video, HDTV, DVI, and multi-rate SDI.

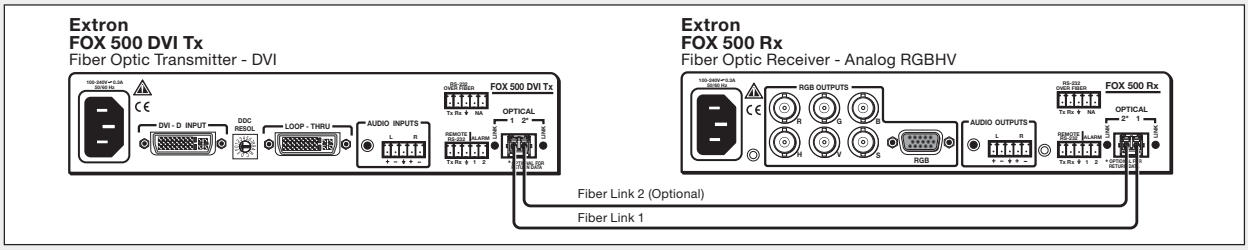
Fiber Matrix 6400

CONVERT BETWEEN DVI AND ANALOG RGB SIGNALS

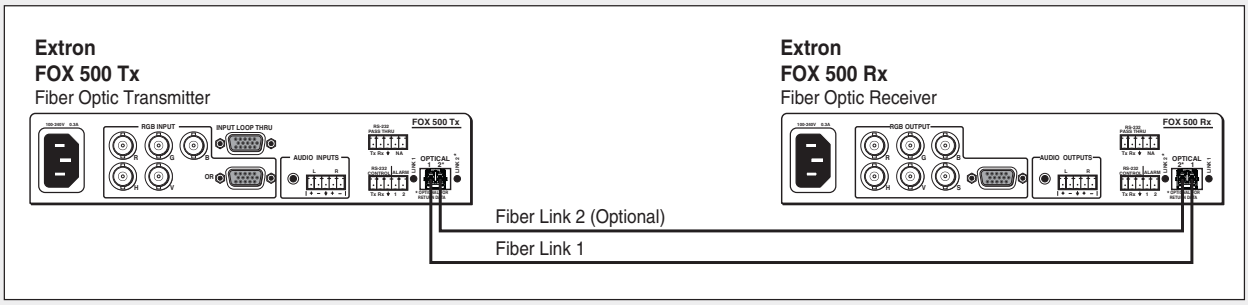
The FOX 500 transmitter and receiver are available separately. Either device can be paired with the FOX 500 DVI transmitter or receiver to provide ultra-long distance conversion of analog RGB signals to DVI-D and vice versa.



Analog RGB signals are digitized at the FOX 500 transmitter before being sent over fiber. With a FOX 500 DVI receiver, the signals remain digital, all the way to a DVI or HDMI-equipped display, so that image quality is fully maintained. A fully digital video signal path simplifies setup by eliminating the need to make adjustments at the display for analog RGB signals, such as phasing, while at the same time ensuring consistent image reproduction.



ENHANCE SYSTEM INTEGRATION WITH A SECOND FIBER LINK



The FOX 500 utilizes one fiber link to send RGB, audio, and uni-directional RS-232 signals long distances. However, additional system functionality is available by adding a second fiber link:

- **Bi-directional RS-232 pass-through communication between locations** – Allows for bi-directional communication with remotely located devices.
- **Control transmitter and receiver at either location** – Full control of all system adjustments is available through the transmitter or receiver RS-232 port, including image adjustment, audio adjustment, calibration, and more.
- **Real-time system monitoring for verification of fiber link status and input signal presence** – Front panel LED indicators on the transmitter and receiver verify active fiber link and input signals. The FOX 500 can be set to send RS-232 alarm codes upon loss of fiber link or input signals.

SPECIFICATIONS

OPTICAL FIBER INTERCONNECTION between transmitter and receiver

Number/type ..... 1 or 2 fiber optic
NOTE: Only one fiber is required to transmit video, audio, and unidirectional data. A second fiber is required to transmit return data for bidirectional control/communication.
Connectors ..... 2 LC connectors
Operating distance
Singlemode ..... 30 km (18.75 miles) with singlemode (SM) cables with a FOX 500 SM
Multimode ..... 300 m (985') with 62.5 µm multimode (MM) cables with a FOX 500 MM
1 km (3280') with 50 µm multimode (MM) cables with a FOX 500 MM
2 km (6561') with 50 µm 2000 MHz bandwidth laser optimized multimode cable with a FOX 500 MM
NOTE: Operating distance is approximate. These are typical maximum distances that may vary depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.
Nominal peak wavelength ..... 850 nm for FOX 500 MM, 1310 nm for FOX 500 SM
Data rate ..... 4.25 Gbps
Transmission power
Singlemode ..... -5 dBm, typical
Multimode ..... -5 dBm, typical
Maximum receiver sensitivity
Singlemode ..... -18 dBm, typical
Multimode ..... -12 dBm, typical
Optical loss budget
Singlemode ..... 13 dB, maximum
Multimode ..... 7 dB, maximum

VIDEO

Gain ..... Unity
Pixel data bit depth ..... 8 bits per channel, 3 channels (R, G, B)
Maximum resolution ..... 1600x1200 @ 60 Hz, digitized pixel for pixel; higher resolutions up to 2048x1120, undersampled

VIDEO INPUT AND LOOP-THROUGH — transmitter(FOX 500 Tx)

Number/signal type ..... 1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs input
1 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs loop-through
Connectors ..... 1 x 5 female BNC or (1) female 15-pin HD for input
(1) female 15-pin HD for loop-through
Nominal level ..... 0.7 Vp-p for RGB
Minimum/maximum levels ..... Analog: 0.3 V to 1.5 Vp-p with no offset
Impedance ..... 75 ohms
Horizontal frequency ..... 24 kHz to 100 kHz
Vertical frequency ..... 40 Hz to 120 Hz
Return loss ..... <-40 dB @ 5 MHz
NOTE: These transceivers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA 21, CFR 1040.10, and FDA 21 CFR 1040.11.

VIDEO OUTPUT — RECEIVER(FOX 500 RX)

Number/signal type ..... 2 VGA-UXGA RGBHV, RGBS, RGsB, RsGsBs (follows input or can be set by user)
Nominal level ..... 0.7 Vp-p for RGB
Minimum/maximum levels ..... 0.3 V to 1.5 Vp-p
Impedance ..... 75 ohms
Return loss ..... -40 dB @ 5 MHz
DC offset ..... ±5 mV with input at 0 offset
Video delay ..... 1-2 frames

SYNC

Input type ..... Autodetect RGBHV, RGBS, RGsB, RsGsBs
Output type ..... RGBHV, RGBS, RGsB, RsGsBs (follows input or can be set by user)
Input level ..... 2.5 V to 5.0 Vp-p
Output level ..... TTL: 5.0 V p-p, unterminated, in HV or S; or 0.3 V p-p on Gs, terminated
Input impedance ..... 510 ohms
Output impedance ..... 75 ohms
Polarity ..... Positive or negative (follows input or can be set by user)

AUDIO

Gain
Range ..... Adjustable, -18 dB to +10 dB
Default
Captive screw connector ..... Unbalanced output: -6 dB; balanced output: 0 dB
Mini stereo jack ..... Unbalanced output: 0 dB
Frequency response ..... 20 Hz to 20 kHz, ±0.5 dB
THD + Noise ..... 0.10% @ 1 kHz at nominal level
S/N ..... >80 dB at maximum output (unweighted)
CMRR ..... 65 dB @ 20 Hz to 20 kHz
Audio bits per sample ..... 18 bits per channel, 2 channels (L, R)
Sampling rate ..... 48 kHz

AUDIO INPUT — TRANSMITTER(FOX 500 TX)

Number/signal type ..... 2 inputs (mixed): 1 balanced stereo; 1 unbalanced stereo or 2 unbalanced mono
Connectors ..... (1) 3.5 mm captive screw connector, 5 pole
(1) 3.5 mm mini stereo jack
Impedance ..... 18k ohms unbalanced, 20k ohms balanced, DC coupled
Nominal level ..... +4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level ..... +17 dBV, (unbalanced) at 1% THD+N
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — RECEIVER(FOX 500 RX)

Number/signal type ..... 2 buffered outputs: 1 balanced stereo; 1 unbalanced stereo or 2 unbalanced mono
Connectors ..... (1) 3.5 mm captive screw connector, 5 pole
(1) 3.5 mm mini stereo jack
Impedance ..... 50 ohms unbalanced, 100 ohms balanced
Nominal level ..... +4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level (Hi-Z) ..... >+19 dBu, unbalanced at 1% THD+N
Maximum level (600 ohm) ..... >+15 dBm, unbalanced at 1% THD+N
Audio delay ..... 1.5 frames

CONTROL/REMOTE

Serial control ports on each unit (transmitter and receiver)
Control ..... 1 RS-232, 3.5 mm captive screw connector, 5 pole (3 pins are used) (rear panel)
1 RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol
Control ..... 9600 baud, 8 data bits, 1 stop bit, no parity
Pass-through ..... 9600 to 115,200 baud
Program control ..... Extron's control/configuration program for Windows®
Extron's Simple Instruction Set (SIS™)

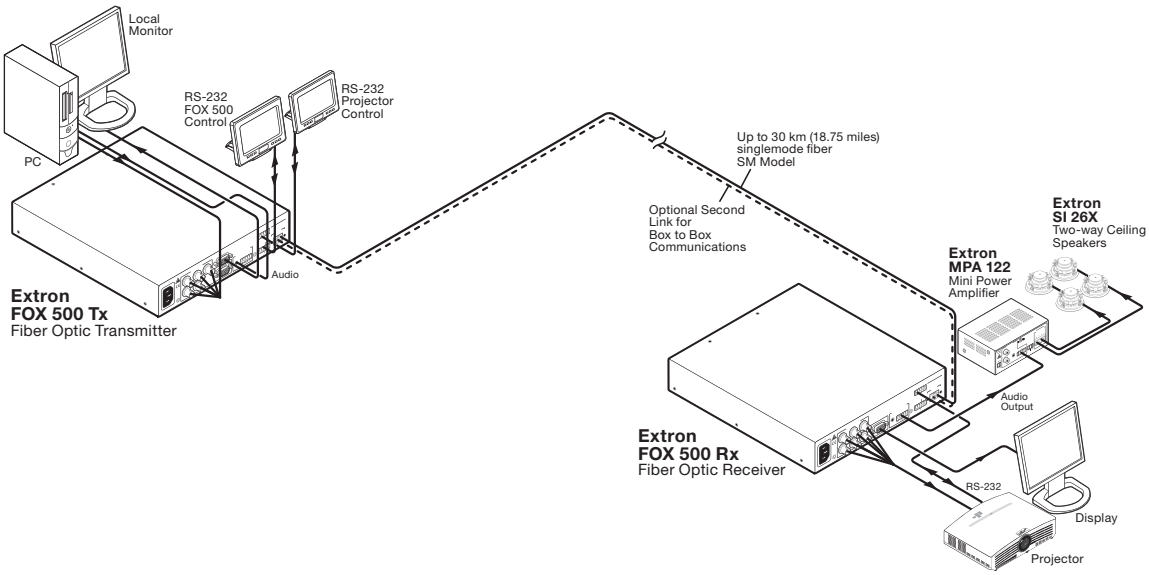
GENERAL

Power ..... 100 VAC to 240 VAC, 50-60 Hz, 11 watts, internal
Cooling ..... Convection, vents on top and sides
Mounting
Rack mount ..... Yes, with optional rack shelf kit
Furniture mount ..... Yes, with optional under desk mounting kit
Enclosure type ..... Metal
Enclosure dimensions ..... 1.7" H x 8.7" W x 9.5" D (1U high, half rack wide)
(4.3 cm H x 22.1 cm W x 24.1 cm D)
(Depth excludes connectors and knobs.)
Product weight ..... 2.3 lbs (1.0 kg) per unit, 4.6 lbs (2.1 kg) per pair
Shipping weight ..... 4 lbs (2 kg) per unit, 8 lbs (4 kg) per pair
Vibration ..... ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance
Safety ..... CE, CUL, FDA Class 1, UL
EMI/EMC ..... CE, C-tick, FCC Class A, ICES, VCCI,
MTBF ..... 30,000 hours
Warranty ..... 3 years parts and labor
NOTE: All nominal levels are at ±10%.
NOTE: Specifications are subject to change without notice.

Model	Version Description	Part number
FOX 500 Tx/Rx MM	Multimode - Pair	60-746-01
FOX 500 Tx/Rx SM	Singlemode - Pair	60-746-02
FOX 500 Tx MM	Multimode - Transmitter	60-746-11
FOX 500 Rx MM	Multimode - Receiver	60-746-21
FOX 500 Tx SM	Singlemode - Transmitter	60-746-12
FOX 500 Rx SM	Singlemode - Receiver	60-746-22

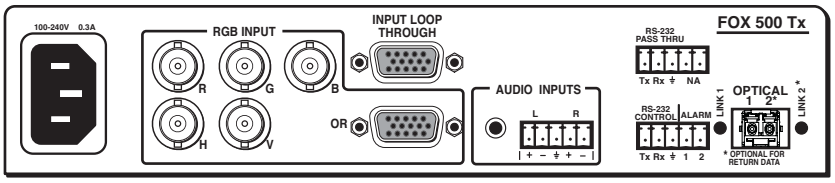
Specifications are subject to change without notice.

APPLICATION DIAGRAM

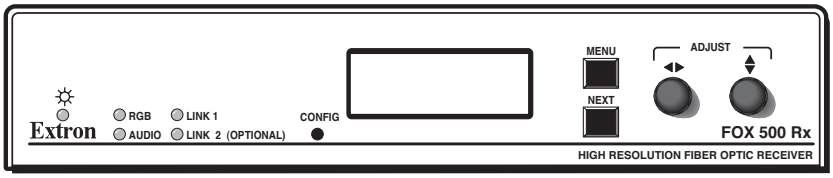


PANEL DRAWINGS

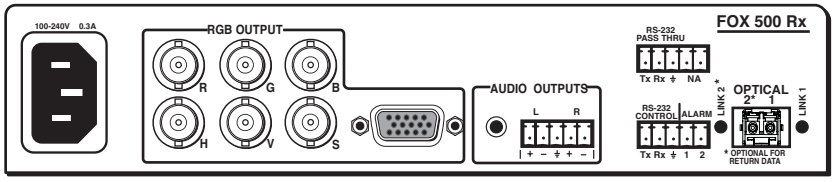
FOX 500 Tx - Front



FOX 500 Tx - Back



FOX 500 Rx - Front



FOX 500 Rx - Back

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